

April 11, 2019

Mr. Edward S. Toole, Chairman
Nantucket Zoning Board of Appeals
2 Fairgrounds Road
Nantucket, MA 02554

Re: Surfside Crossing Development
ZBA File No. 20-18
Peer Review: Wastewater and Sewer

Dear Mr. Toole:

Weston & Sampson has reviewed the wastewater system design for the Surfside Crossing Development. Our review is based on the revised plans, entitled "Surfside Crossing a Proposed 40B Development in Nantucket, Massachusetts", revised March 19, 2019. It is our understanding that the next ZBA meeting is scheduled for Thursday, April 11, 2019 and that the project proponent has asked the ZBA to close the hearing at that meeting.

Project Proponent's Proposed Alternative

The March 19, 2019 revised plans submitted by the project proponent are incomplete and do not allow for a complete review of the proposed wastewater collection system for the proposed development. The following information and design components are missing from the plans:

1. The revised plans do not include information on the proposed wastewater flows for the development.
2. The revised plans do not show sewer services to the buildings.
3. The revised plans for the multi-family parcel do not have sewer profiles.
4. The revised plans do not include specifications for materials, construction requirements and testing requirements related to the sewer system.
5. The revised plans do not show methods to protect the town's existing 20-inch and 16-inch force mains that cross through the proposed development. The design needs to provide methods to ensure protection of the force mains during construction as there will be multiple utility crossings installed above and below the force mains. In addition, there is concern for traffic loading over the force mains during the construction of the overall development. The design needs to provide methods to protect the force mains from the heavy equipment that will be driving back and forth over the force mains during construction.
6. The revised plans show a force main connection to the town's existing 12-inch force main in South Shore Road. As discussed in our January 25, 2019 review letter, we do not recommend connecting the Surfside Crossing Development to this force main. The 12-inch force main currently pumps flow from the South Valley Pump Station and will soon include flow from the new Monomoy South Pump Station being built as part of the Nantucket Harbor Shimmo project. Based on our evaluation of the force main hydraulics during the design of the Monomoy South Pump Station, there is concern that additional flow to this force main could have an adverse impact on the operations of the existing pump stations.
7. In a March 7, 2019 letter to the ZBA, the project proponent appears to dispute our recommendation, but provides no information as to why they dispute our recommendation. The project proponent has

not provided an evaluation of the force main hydraulics to show that their proposed alternative will not have adverse impacts on the operations of the existing pump stations. The project proponent's engineer has recently suggested that they could install controls and an oversized wetwell to limit when their proposed pump station will operate. However, no information has been submitted on this design, including an evaluation as to what happens if the controls fail or are manually overridden. Our concerns with this type of system are discussed in our January 25, 2019 letter. The town's existing pump stations do not operate in the manner suggested by the project proponent's engineer.

8. The revised plans do not provide information on the size of the proposed force main, nor do they provide any detail as to the connection to the existing force main.
9. The revised plans do not include any design information for the pump station. A generic pump station detail was all that was provided. As discussed in our initial Peer Review letter, dated August 17, 2018, any wastewater pump stations need to be designed to the Town's latest standards. Copies of sample plans and key components/requirements for pump stations were sent to the proponent's engineer in September 2018.

Town's Preferred Alternative

Based on the future needs areas and the sewer system extensions recommended in the 2014 Comprehensive Wastewater Management Plan (CWMP), the installation of a gravity sewer along South Shore Road with a new pump station installed at the Surfside WWTF would be the preferred alternative for the town. This option would be consistent with the ongoing sewer master planning approach to serving the wastewater needs of the area. A new gravity sewer along South Shore Road could serve the Miacomet Needs Area as well as the properties along South Shore Road and would avoid impacting the operations of the existing pump stations and the town's force main system. This option could also allow for the diversion of flow from the three existing pump stations along South Shore Road which currently pump flow to the Surfside Road Pump Station. This diversion of flow would allow for additional capacity at the Surfside Road Pump Station.

Wastewater is pumped to the Surfside WWTF via the Sea St Pump Station, the Surfside Rd Pump Station, the South Valley Pump Station and the new Monomoy South Pump Station. There are 3 force mains (20-inch, 16-inch and 12-inch) that convey flow to the Surfside WWTF. The three force mains manifold together at the WWTF prior to the headworks. As such, the operation of each of the pump stations impacts the force main system hydraulics. Due to hydraulic capacity limitations and structural pipe condition concerns, we do not recommend connecting additional pump stations to these force mains.

As previously discussed, the 16-inch force main failed during the winter of 2018. While the breaks have been repaired, there are concerns with the structural condition of the remainder of the pipe. The force main is not in operation and will only be used in an emergency, per the recommendation of Environmental Partners Group, the town's consultant for the force main evaluation. Flow from the Sea St Pump Station and the Surfside Rd Pump Station are pumped through the 20-inch force main. Due to the age and configuration of the 20-inch pipe, there is concern for the structural condition of this pipe as well. The planned inspection was put on hold due to the failure of the 16-inch force main and the need to keep the 20-inch force main in service. The Sewer Department is currently looking at replacing the 16-inch force main followed by an inspection and rehabilitation of the 20-inch force main. During the repair of the 16-inch force main, a break at the force main manifold at the WWTF occurred. Due to the age and location, there is concern for the structural condition of the force main manifold, as well as the force main pipe from the manifold to the WWTF headworks. These pipe segments will be evaluated along with the 20-inch force main.

Flow from the South Valley Pump Station and the Monomoy South Pump Station are pumped through the 12-inch force main. As discussed above and based on our evaluation of the force main hydraulics during the design of

the Monomoy South Pump Station, there is concern that additional flow to this force main could have an adverse impact on the operations of the existing pump stations.

Recommendations

Assuming the ZBA is requested to close the hearing on Thursday, April 11, 2019, our recommendations include the following:

1. The wastewater collection system for the proposed development shall not be connected to the town's existing force mains.
2. The wastewater collection system for the proposed development shall include the town's preferred option of a new gravity sewer along South Shore Road, from the proposed development to the Surfside WWTF. This option would relocate the proposed wastewater pump station from the proposed development to the Surfside WWTF.
3. The deficiencies in the revised plans discussed above shall be addressed to the satisfaction of the Nantucket Sewer Department.
4. The wastewater collection system for the proposed development shall be constructed in accordance with the Nantucket Sewer Department Design Standards and Specifications in place at the time of construction. The final design plans shall be submitted to the Nantucket Sewer Department for review and approval to ensure conformance with the Design Standards and Specifications.
5. The 2014 CWMP identified the sewer needs areas in Town. These flows were used to determine the capacity of the Surfside WWTF, which is currently being upgraded. While the proposed development properties are part of the service area to the WWTF, the density of the proposed development creates much higher wastewater flows than the current zoning would allow. The additional flow from the proposed development would be taking up planned capacity at the WWTF. We recommend that the town not grant waivers of sewer related fees and that all properties in the proposed development be subject to the appropriate sewer fees outlined in the Nantucket Sewer Department Rules and Regulations in place at the time of construction. These fees include, but are not limited to, sewer connection fees, sewer user fees and sewer capacity fees.
6. The project proponent shall submit stamped record drawings of the wastewater collection system. Record drawings shall also be provided in the latest version of AutoCad.
7. The project proponent shall submit copies of the Operations & Maintenance Manual for the pump station, as well as an electronic copy on a CD or portable drive.
8. The project proponent shall establish and provide a copy of the legal entity's (e.g. home owner's association) documents to ensure proper operation and maintenance of the proposed wastewater collection system on private property.

If you have any questions regarding our review of the Surfside Crossing Development's wastewater system, please do not hesitate to contact me.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.



Daniel E. Sheahan,
Senior Associate